

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims

1. - 3. (Canceled)

4. (Currently Amended) A semiconductor integrated circuit chip, formed as a plate-like semiconductor chip, comprising:

a circuit forming layer, on which a plurality of circuits are formed, being formed on one surface side of the plate-like semiconductor chip; and

a heat transfer layer, connected with the plate-like semiconductor chip in one body, being formed on another, opposing surface side of the plate-like

semiconductor chip, and which ~~comprises, in an inside thereof~~ forms between said another, opposing surface side of the plate-like semiconductor chip and one surface side of said heat transfer layer opposing thereto:

a closed flow passage;

an operating fluid hermetically enclosed within said closed flow passage; and driving means of said operating fluid,

wherein said driving means of the operating fluid is made of electrically operated means for giving vibration to the hermetically enclosed operating fluid,

wherein said heat transfer layer is made of a material similar to that of said semiconductor chip, and

wherein the vibration giving means includes a resistor layer, positioned outside the closed flow passage of said operating fluid, which enables formation of bubbles in the operating fluid.

5. (Previously Presented) The semiconductor integrated circuit chip according to claim 4, wherein said resistor layer is disposed in a region where heat generation density is lower than an average of heat generation density of said integrated circuit chip as a whole.

6. (Previously Presented) The semiconductor integrated circuit chip according to claim 4, wherein said operating fluid is water.

7. (Previously Presented) The semiconductor integrated circuit chip claim 4, wherein said plate-like semiconductor chip includes logic elements and memory elements which are formed separately within said one surface side thereof.

8. (Previously Presented) The semiconductor integrated circuit chip according to claim 4, wherein the closed flow passage in said heat transfer layer is configured as a plurality of closed flow passages at said another surface side of said semiconductor chip.

9. (Previously Presented) The semiconductor integrated circuit chip according to claim 8, wherein each of said plurality of closed flow passages has a separate said means for driving the operating fluid enclosed within an inside thereof.

10. (Previously Presented) The semiconductor integrated circuit chip according to claim 9, further comprising a plurality of temperature detecting means which are provided within said semiconductor chip, wherein the plural driving means, which are provided for the plural closed flow passages, respectively, are controlled in dependence on temperature detection outputs from said temperature detecting means.

11. (Previously Presented) The semiconductor integrated circuit chip according to claim 8, further comprising another closed flow passage, which is formed at a same surface side of said semiconductor chip as said plurality of closed flow passages and crossing over said plurality of closed flow passages.

12. (Previously Presented) The semiconductor integrated circuit chip according to claim 11, wherein each of said plurality of closed flow passages has a separate said means for driving the operating fluid enclosed within an inside thereof.

13. (Previously Presented) The semiconductor integrated circuit chip according to claim 12, further comprising a plurality of temperature detecting means which are provided within said semiconductor chip, wherein the plural driving means, which are provided for the plural closed flow passages, respectively, are controlled in dependence on temperature detection outputs from said temperature detecting means.

14. (Currently Amended) A semiconductor integrated circuit chip, comprising:

a plate-like semiconductor chip;

a circuit forming layer, on which a plurality of circuits are formed, being formed on one surface side of said plate-like semiconductor chip; and

a heat transfer layer, being formed on another surface side of the plate-like semiconductor chip, opposite to the surface side on which said circuit forming layer is formed and connected therewith in one body, for suppressing a local increase of temperature caused by heat generation of circuits within said circuit forming layer of said semiconductor chip, said heat transfer layer comprising forming between said another, opposing surface side of the plate-like semiconductor chip and one surface side of said heat transfer layer opposing thereto:

a closed flow passage;

an operating fluid hermetically enclosed within said closed flow passage; and driving means of said operating fluid,

wherein said driving means of the operating fluid is made of electrically operated means for giving vibration to the hermetically enclosed operating fluid,

wherein said heat transfer layer is made of a material similar to that of said semiconductor chip, and

wherein the vibration giving means includes a resistor layer, positioned outside the closed flow passage of said operating fluid, which enables formation of bubbles in the operating fluid.

15-20. (Canceled)

21. (Previously Presented) The semiconductor integrated circuit chip according to claim 4, wherein both said plate-like semiconductor chip and said heat transfer layer are made of a material of silicon.

22. (New) A semiconductor integrated circuit chip, formed as a plate-like semiconductor chip, comprising:

a circuit forming layer, on which a plurality of circuits are formed, being formed on one surface side of the plate-like semiconductor chip; and

a heat transfer layer, connected with the plate-like semiconductor chip in one body, being formed on another, opposing surface side of the plate-like semiconductor chip, and which forms between said another, opposing surface side of the plate-like semiconductor chip and one surface side of said heat transfer layer opposing thereto:

a closed flow passage;

an operating fluid hermetically enclosed within said closed flow passage; and
driving means of the hermetically enclosed operating fluid,
wherein said heat transfer layer is made of a material similar to that of said
semiconductor chip.

23. (New) A semiconductor integrated circuit chip, comprising:
a plate-like semiconductor chip;
a circuit forming layer, on which a plurality of circuits are formed, being
formed on one surface side of said plate-like semiconductor chip; and
a heat transfer layer, being formed on another surface side of the plate-like
semiconductor chip, opposite to the surface side on which said circuit forming layer
is formed and connected therewith in one body, for suppressing a local increase of
temperature caused by heat generation of circuits within said circuit forming layer of
said semiconductor chip, said heat transfer layer forming between said another,
opposing surface side of the plate-like semiconductor chip and one surface side of
said heat transfer layer opposing thereto:
a closed flow passage;
an operating fluid hermetically enclosed within said closed flow passage; and
driving means of the hermetically enclosed operating fluid,
wherein said heat transfer layer is made of a material similar to that of said
semiconductor chip.

24. (New) The semiconductor integrated circuit chip according to claim 23, wherein both said plate-like semiconductor chip and said heat transfer layer are made of a material of silicon.